CHAIRMAN OF THE JOINT CHIEFS OF STAFF INSTRUCTION

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GLOBAL COMMAND AND CONTROL SYSTEM COMMON OPERATIONAL PICTURE REPORTING REQUIREMENTS

Reference(s): See Enclosure F

1. Purpose. This instruction establishes reporting policies, general responsibilities, and other activities required to initiate and maintain the Global Command and Control System (GCCS) Common Operational Picture (COP) for the combatant commands, Services, Defense agencies (C/S/A) and the Joint Staff. This instruction follows the guidance and organization of the Joint Reporting Structure (JRS) outlined in reference a. Also, this instruction addresses general policies for the GCCS system as it exists; expected or planned future capabilities are not addressed due to inevitable technical advancements. Although the general policies in this instruction provide a framework for standardization, commanders at all levels must determine specific, detailed implementation procedures that meet the intent of this instruction. Also, commanders will ensure local procedures comply with the Joint Technical Architecture (JTA) (reference b).

2. Cancellation. None.

3. Applicability. This instruction applies to the Military Services, Joint Staff, combatant commands, and those activities and agencies reporting to the Chairman of the Joint Chiefs of Staff. The term "Military Services" refers to the Army, Navy, Air Force, Marine Corps, and Coast Guard (when assigned to the Navy). Commanders of forces operating as part of a multinational (alliance or coalition) military command should follow multinational reporting instructions and procedures ratified by the United States. For reporting instructions and procedures not ratified by the United States, commanders should evaluate and follow the multinational command's intent on reporting and procedures where applicable.

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4. Policy. GCCS provides the combatant commands and Joint Force Commanders (JFCs) the ability to provide military information rapidly to the National Command Authorities (NCA), as well as other supporting commands in accordance with reference a. The GCCS COP is a key tool for commanders in planning and conducting joint operations. The COP enhances the flow of information between the NCA, Joint Staff, and commanders, both supplementing and amplifying Commander's Situation Reports (SITREPS), Operations Reports (OPREPS), and other reports outlined in reference a. The value of the COP is displaying battlespace information in a graphical manner with links to detailed information that similar reports such as SITREPS and OPREPS are unable to display. It is not the intent of this publication to provide procedures or requirements that restrict the authority or flexibility of the JFC from executing the mission in a manner that the JFC deems appropriate to ensure successful mission accomplishment. Commanders at all levels will identify relevant COP data requirements and help develop automated COP data feeds to reduce manual track management tasks to optimize limited personnel. Valid requests for additional personnel will be addressed, as required, through normal personnel channels.

a. National Command Authorities. The COP provides necessary and vital battlespace information in order for the NCA to provide strategic direction for combatant commanders in accordance with references a and c.

b. Standardized Procedures. Standard procedures and conditions for transmitting the COP to the NCA and supporting commanders are necessary to facilitate situation reporting. Standardized procedures are also necessary in order for the Military Services to provide CINCs with personnel adequately trained in COP reporting procedures. The use of the COP should become a standard reporting tool for the full spectrum of any US force engagement and at all levels of operations and war. The operational spectrum stretches from war to military operations other than war (MOOTW). Examples include conditions warranting the establishment of Joint Task Forces (JTF), crisis situations, joint field exercises, and normal daily operations. The levels of war are strategic, operational, and tactical. The levels are defined based on their effect or contribution to achieving strategic, operational, and tactical objectives. The COP must become an integral facet of the command and control process. Therefore, use of the COP on a daily basis, as well as for JTF exercises, is necessary to ensure proficiency and continued development.

c. Maintaining the COP. Combatant, functional, and JFCs will maintain the COP according to the policies in this instruction.

d. Exercising Judgment. The COP is an evolving system; hence, procedures will need modification as the system changes. As outlined in reference c, commanders will exercise judgment in applying joint procedures, provided in joint instructions, while still meeting the intent of joint instructions. This means that reporting policies, such as contained in this instruction, cannot possibly cover all operational situations. These procedures provide a baseline adaptable to the situation at hand. Commanders have the flexibility to tailor reporting criteria if the situation warrants, while striving to meet the intent of this instruction. Commanders should recommend any changes to reporting procedures in this document based on experiences in administering the COP in operational situations.

e. Use of COP Information. Reference d states JFCs choose the capabilities they need from the air, land, sea, space, and special operations forces at their disposal. Therefore, each CINC, JTF, or Service has its own unique requirements and responsibilities to perform. CINCs or JFCs may tailor the COP to their benefit. If every event, unit, and track were displayed simultaneously in a complex battlespace environment, the resulting chaos would provide little information of value. Filtering selected information is essential. Therefore, battlespace information for display on the COP is broken down into an importance hierarchy. This hierarchy allows for a tailored range of information display and communication options. Display information may be broken down into categories such as essential, necessary, additive, enhancement, and extraneous (see Glossary). Until fully automated, manual input of data may overburden reporting cells. CINCs must determine and define which level of information is necessary for the mission at hand and allow track managers to maintain the COP at the appropriate level. However, tailoring needs to be within the framework of the reporting guidance provided in this instruction.

f. Range of Options. Reference d states JFCs need to have a broad range of options to defeat an enemy in war or to conduct operations other than war. Therefore, the COP needs to provide a wide range of options as well, suitable to the task at hand. Hence, operational commanders have a unique role in the evolution of the COP into a more robust, automated, and universal GCCS function, tailored to meet the full spectrum of possible uses. Nevertheless, accurate reporting of the COP according to the procedures contained within

this instruction is essential to ensure that all levels of command up to and including the NCA can perform their functions.

g. Goal of Information Reporting. The goal of this instruction is to provide reporting policies around an operational architecture that provides the right information, at the right time, to the right level. The GCCS COP allows information reporting at various levels of importance and at different force or echelon levels. Not all information is appropriate all the time for all levels of command for every operation. To achieve this goal, reporting requirements are categorized into importance of information (essential, necessary, additive, enhances, and extraneous), force level (high interest tracks, major combat elements, major aviation units, major force, and SOF units), and situational response (normal daily operations, crisis situations, JTF operations, major joint field exercises, and MOOTW). Also, time criteria for each component provide for a time element to keep information valid. This hierarchy of COP reporting allows a graded reporting based upon the situation at hand.

5. Value of Battlespace Situational Awareness. A well maintained COP provides the warfighter several battlefield advantages. This policy ensures COP capabilities for a wide range of situations that will provide the warfighter important battlespace information. This policy provides the right set of rules for current technology and is graduated to provide the warfighter the appropriate view of the battlespace. Specific advantages of a well maintained COP are:

a. Reduces the degree of operational uncertainty.

b. Allows commanders to create and control the battlespace dynamics and not react to them.

c. Gives commanders more control of the operational tempo of US and coalition forces.

d. Reduces the time of US C2 decision making, thereby dominating the opponent's decision cycle.

e. Gives commanders the ability to identify, focus, and control operations against the center of gravity.

f. Provides commanders a common reference for planning, executing, and assessing mission performance.

6. Summary of Changes. None.

7. Effective Date. This instruction is effective upon receipt.

\Signature\
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Vice Admiral. U.S. Navy
Director, Joint Staff

Enclosure(s):
- A- - Reporting Requirements
  - Appendix A- - Air Tasking Order Reporting Requirements
- B- - Information Flow and Data Management
- C- - COP Operational Architecture
- D- - Personnel and Training Requirements
- E- - Responsibilities
- F- -References
- Glossary

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ENCLOSURE A

REPORTING REQUIREMENTS

1. General. There are five separate reporting circumstances or contingencies: normal daily operations, crisis situations, JTF operations, major joint field exercises, and MOOTW. The NCA, Joint Staff (NMCC), Services, and supporting commanders need information from a CINC's area of responsibility (AOR) via the COP. The CINC is responsible for providing the COP according to the requirements in this instruction. To accomplish this, CINCs maintain the COP and Common Tactical Data Set (CTD) designate responsibility for each Common Tactical Picture (CTP) in their respective AORs. These requirements may be altered or modified by the NCA or the Chairman of the Joint Chiefs of Staff if conditions warrant.

a. Consistent with reference a, CINCs should develop a single reporting structure for the COP to provide information required by the NCA, the Chairman, subordinate joint forces, and component commands and their headquarters. In reporting the COP, a single structure will facilitate clear, accurate, and timely data fusion and correlation.

b. The baseline information included in a COP are:

(1) Basic overview of the CINC's AOR including current, anticipated, projected, and planned disposition of hostile, neutral, and friendly forces at the major force level.

(2) Overlays, manual inputs, labels, etc., that show the commander's intent, location of major headquarters, METOC information, battleplans, limited order of battle information, and functional boundaries the CINC determines to be truly relevant to the operation at hand (e.g., area of interest, area of influence). Wherever possible, commanders need to push for automated input of this information.

(3) Amplifying information that may include the ATO, information from SORT, JOPES, and processed and raw intelligence.

c. For all situations requiring reporting, the CINC is responsible for site selection and management of the COP, CTD, and CTPs within

each AOR. CINCs have the responsibility to direct procedures for components within their respective AORs to update the COP as necessary. The node that accomplishes this function is called the COP Correlation Site (CCS). The CCS will function to deconflict and pull all information necessary together to build a COP. Components will transmit all necessary information and data to the CCS for inclusion into the CTD. All tactical sensor information for the CINC's AOR will automatically feed into a separate site known as the CTD repository. At the CTD, data is combined with processed intelligence, position, and status reports, such as SORTS and manual inputs. The CTD repository is accessible by the COP and all CTPs. The CTD provides the baseline data to produce an accurate and timely CTP.

d. At the JTF the CTPM and track manager fuse and correlate the data from the CTD to produce the CTP. Each CTP is for use as a tactical picture for force employment and force planning for a single crisis or conflict within that AOR. If a JTF stands-up, they can request or be assigned responsibility for the CTP. This enables the CJTF to control information within the Joint Operations Area (JOA), but still allows the CINC to maintain functional control of the AOR via the COP and maintain one tactical database via the CTD. Theater-generated overlays and projections (i.e., METOC, battleplans, force position projections) applied to the CTP and filtering of information to the appropriate level of detail provide a COP. All users, especially the CCM and CTPM, have the ability to pass display filter packages to create the same picture for commonality. Users then can tailor the picture for unique mission needs.

e. The CCM and CTPCM will create, test, and share broadcast filter packages with all CINC COP recipients. This ensures the COP recipients know the effect of filtering and know what information is being sent and what information is being filtered by the CCS. The NMCC, Service Headquarters, agencies, and supporting CINCs have the COP information available to them. If they have a unique data requirement not currently resident on the COP, they should coordinate with the CINC to get the necessary information. As COP architecture and technology improves this instruction will be changed to take full advantage of COP capabilities with regards to reference a. Figure 1 shows the relationships of responsibilities for building the COP, CTP, and CTD.

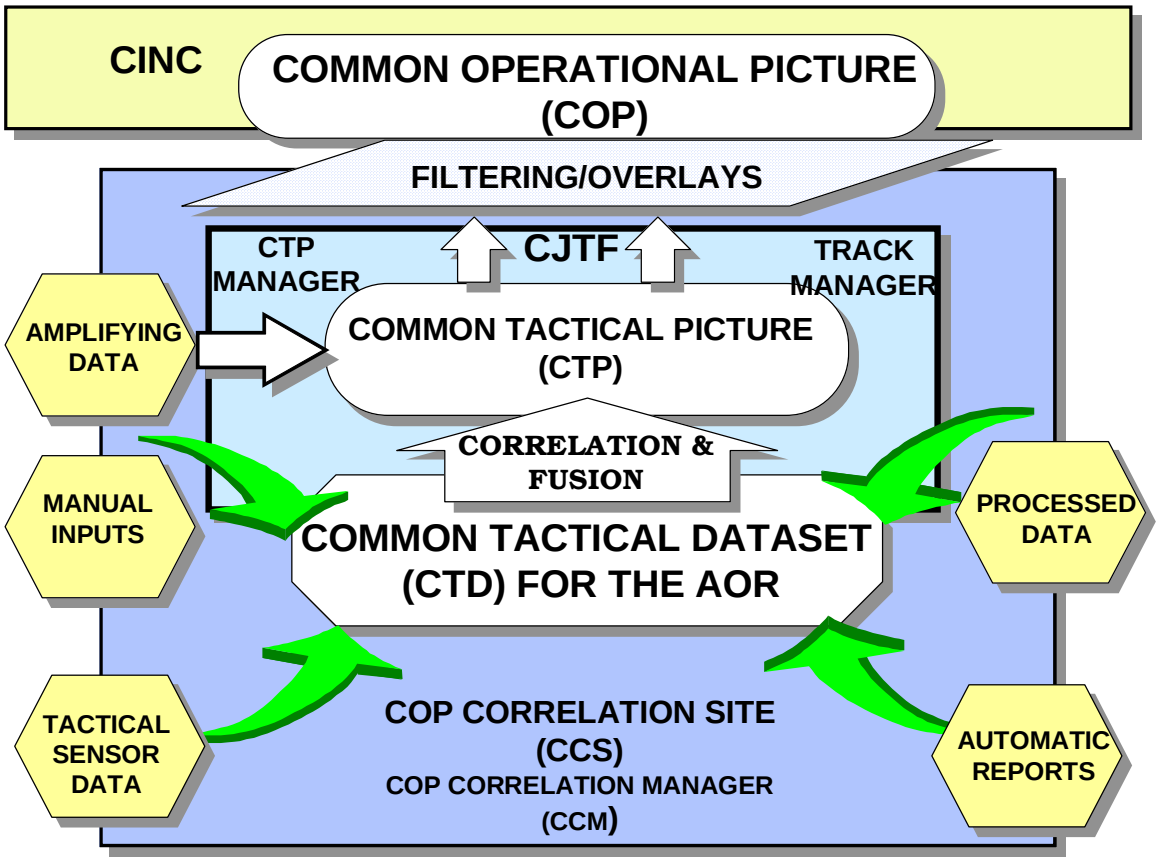

FIGURE 1. COP BUILD/RESPONSIBILITIES RELATIONSHIPS

f. The COP enhances and supplements existing Service reports, but also provides data in a graphical manner on a near-real-time basis that conventional text-based reports are not capable of doing. One major advantage of the COP is that it gathers information from various sources into one concise graphical format. This prevents operators and planners trying to do the same on a manual basis with the myriad of text-based existing reports and verbal input. The COP, therefore, provides an ability to provide a battlespace situational awareness to commanders at all levels allowing for rapid decisions and responses resulting in unprecedented leverage. As the COP continues to evolve, the value of this information and the time savings will become a force multiplier. The COP, however, does not override the requirements for reporting of other information outlined in reference a.

g. Level of reporting detail consists of two elements, information level and force level. Information level refers to the hierarchy of COP information and consists of the following categories: essential, necessary, additive, enhances, or extraneous. Force level information

refers to the force size that is reported and consists of the following categories: high interest tracks, major combat elements, major aviation units, SOF forces, and major forces. The terms are defined in the Glossary.

h. The purpose of reporting requirements is to provide consistent and critical battlespace status information to commanders at all levels so they can make decisions and analyze and plan operations. This instruction provides specific requirements to build an accurate COP including the current representation of the battlespace or CTP. To achieve the goals of this instruction, the reporting system must be flexible enough to allow for differences in organizational structures, situational variances caused by the operation at hand, and different operating styles of each CINC. Hence, CINCs have the responsibility to designate the appropriate level of information and the force levels ensuring the COP accurately displays the current situation. The CCS will play a key role in providing the level of detail necessary to build an accurate COP. Level of detail will be situational dependent.

i. Specific reporting requirements, level of detail, and force level reporting may be further defined during crisis action planning following each ALERT ORDER or WARNING ORDER by GENADMIN message if necessary.

j. Not all information that makes up the COP will come from automated sources. Although GCCS continues to mature, some track data will require manual inputs. Situation reports, SORTS data, and verbal inputs from the AOR are major sources of manual input data. A majority of filtering may have to occur on a manual basis as well.

k. Each component picture consists of a collection of tracks and force locations. A track is a single weapon system transiting the CTP. An example of a track is a single vessel as a part of a Carrier Battle Group (CVBG) transiting the CTP. A force is an aggregation of military personnel, weapon systems, vehicles, and necessary support, or combination thereof. A force under way may be a collection of tracks. For example, a CVBG is a force but each vessel is a track. A force may be in motion or stationary at a location, such as a garrison, headquarters, or operating position of any component of any size. For example the headquarters of a wing, battalion, or a CVBG at port. For the purposes of this instruction a force may be a major aviation unit, major combat element, or major force that is stationary as defined in this CJCSI. Unless the force reporting is automated, manual inputs may be limited to only the most significant of forces as determined by

the CINC or specifically designated by the NMCC in an ALERT ORDER or WARNING ORDER.

l. COP reporting to the NMCC needs to be standard; however, each CINC faces different operations of different complexities. The size and elements of each major element, force or aviation unit will vary by CINC, operation, situation, and plan. Use the definitions in this instruction to determine the appropriate reporting of forces for each situation.

m. When technically and operationally feasible and necessary to the operation, the COP should have common air traffic (commercial), strategic lift, and ferrying of support forces available for display.

2. Time-Late Limitations on Tracks. The successful employment of GCCS as a command and control system relies upon the relevance and accuracy of the information it displays. Invalid or erroneous track information undermines this reliability and diminishes the system's utility. Track position, track speed, and the time value (age) of the information are all interrelated. Even though the COP is not used for operational control of tracks, exercise caution when deleting tracks merely based on their "time-late" status. Each CINC will need to determine procedures, appropriate to the situation at hand, for handling late tracks. Options may include flagging late tracks (by use of a predefined color or symbolic overlay) or coordinating current status on special interest tracks. Risk of corrupting the CTD increases as time passes after a track's last update. Therefore, limits should be placed upon the acceptable time-late characteristics of reported tracks as follows:

a. Air Tracks. Delete airborne tracks whose time-late period exceeds 10 minutes. Coordinate with originator of late track data to determine status of tracks if uncertain of track validity.

b. Ground Tracks/Forces. Update or delete ground tracks (in or from the CTD) or forces whose time-late period exceeds 12 hours, if a tracked unit may reasonably change its position within that period of time. For units that would normally remain fixed in a particular location, this period may be extended by the JFLCC.

c. Maritime Tracks/Forces. Update or delete maritime tracks (in or from the CTD) whose time-late period exceeds 2 hours for operational assets and 6 hours for strategic, noncombatant tracks, unless the

unit is in port or at anchor. Update period for tracks that are in port or anchor may be extended to 12 hours.

d. Special Operations Component (SOC). CINCs should include all SOF units which are participating in operations classified at the secret collateral level and below.

e. Space Tracks. USSPACECOM is responsible for all space tracks, including but not limited to sensor footprints, overhead pass times, and system status. Update space tracks no less than daily and as significant changes in space assets warrant updating.

(1) GCCS currently overlays active space tracks through its tactical decision aid (TDA) option.

(2) Space tracks are processed by the space surveillance network and are not always in view or contact with a sensor. Space tracks are plotted using orbital element sets which predict the location of space objects using an approved orbital propagator, such as the one existing in COP. USSPACECOM is responsible for generating these element sets.

3. Normal Daily Operations. The COP must become an integral part of the CINC's and component's daily operation. Only through daily use will proficiency be gained to be able to handle the reporting load during all other reporting circumstances. Each CINC will maintain a data set of current information on all force locations and tracks available. From this data set each CINC will provide a COP, available to the NMCC, that includes current tactical information and overlays according to the guidance below and any additional information the CINCs determine significant to their AOR. This information will include all automated information excluding extraneous information. Also this information will include manual inputs of essential and necessary detail levels including any additive detail-level information that can be easily inserted (see definition for COP hierarchy of information).

a. Air Picture/Forces. The air components will report location of major combat elements by type when not airborne (see definition of major aviation unit). This normally will be the garrison location of major aviation units at the squadron level or above. Location information can be geographically displayed using Global Status of Resources and Training System (GSORTS). Report high interest tracks (VIPs, special missions, special interest) operating within the normal area of responsibility for the respective CTP.

b. Ground Picture/Forces. Ground components report major combat elements.

c. Maritime Picture/Forces. The naval component will report locations of all ships or air elements as appropriate.

d. Special Operations. Report selected SOF units that the CINC determines are key to operations.

e. Space Tracks. USSPACECOM will report the location of all space assets of military interest to the appropriate classification level. These include all friendly, hostile, neutral, and unknown space assets that may impact military operations.

f. Special Interest Tracks/Forces. Include tracks, regardless of size or composition, of special importance that are key to an operation, linked to major negotiations, have national-level interest and may involve the NCA. Examples of this include search and rescue operations, humanitarian assistance forces, activities surrounding mishaps, freedom of navigation operations, Global Reach missions, and transit of forces in high-interest peacekeeping operations.

4. Crisis Situations. Upon issue of an ALERT ORDER, CINCs will establish crisis situation reporting procedures detailed below. Normal procedures call for the implementation of crisis situation COP reporting procedures when a situation arises that requires close monitoring, but a JTF has not been or will not be stood up. Crisis monitoring will usually entail focusing on a specific region or area of interest. If any additional reporting requirements are necessary, the NMCC will provide them via GENADMIN message. Either the NCA or the CINC may designate that area of interest. Responsibility of reporting falls to the respective air, land, or maritime component.

a. Air Tracks/Forces. Report all air tracks within the area of interest down to the enhancement information level. If possible, report significant air tracks outside the area of interest down to the necessary detail information level. In addition, report the location of major aviation units.

b. Ground Forces. Report friendly, hostile, and neutral ground units within the area of interest down to the major combat element size and necessary detail information level.

c. Maritime Tracks. Report all known maritime tracks within the area of interest through the entire spectrum of information level of detail. If possible, report significant tracks to the enhancement level outside the area of interest. This should include combatants and other high-interest tracks. Out of the area combatants may be grouped together as a major command element as appropriate.

d. Special Operations. The CINC may direct the joint special operations task force (JSOTF) to report positions of SOF units down to team level whenever their employment is of operational and strategic importance. The CINC may also direct reporting of paramilitary units or units other than military forces if they are relevant to the situation. Units will be reported in their current positions and updated as they move.

e. Space Tracks. USSPACECOM will report the location of all space assets of military interest to the appropriate classification level. These include all friendly, hostile, neutral, and unknown space assets that may impact military operations.

5. JTF Operations. If assigned by the CINC, the CJTF can assume track manager and fusion center responsibilities for the CTP. At this point the CJTF is responsible for the CTP within the JOA assigned to the CJTF. This function may be passed down to a JTF component or back to the CINC depending upon available resources, personnel, and communications availability.

a. Reporting. The JTF, or designated cell will transmit COP/CTP data to the components, other CINCs, supporting CINCs, and the NCA through the NMCC (if specified to do so in amplifying instructions). The COP/CTP will be updated in accordance with paragraph 2 of this enclosure. Use the following reporting requirements unless modified by the CINC or the Chairman, based upon operational requirements. The responsibility of reporting falls to the respective joint component.

(1) Air Tracks/Forces. Report all air tracks within the Joint Operational Area (JOA) down to the enhancement level. If possible, report significant air tracks originating outside the area of interest (such as known military aircraft) down to the essential and necessary information level. In addition, report the location of major aviation units.

(2) Ground Forces. Report friendly, hostile, and neutral ground units within the area of interest down to the major combat element

level. Units will be reported in their current positions and updated as they move.

(3) Maritime Tracks. Report all known maritime tracks within the JOA. Report tracks originating outside the JOA (such as major combatants or submarines) to the enhancement level outside the JOA, such as major combatants or submarines.

(4) Special Operations. The CINC may direct the JSOTF to report positions of SOF units down to team level whenever their employment is of operational and strategic importance. The CINC may also direct reporting of paramilitary units or units other than military forces if they are relevant to the situation. Units will be reported in their current positions, and updated as they move.

(5) Space Tracks. USSPACECOM will report the location of all space assets of military interest to the appropriate classification level. These include all friendly, hostile, neutral, and unknown space assets that may impact military operations.

6. Joint Exercises. Comply with the requirements of preceding paragraphs for JTF operations for significant field exercises.

7. MOOTW. Increasingly, JTFs have been called upon to meet national objectives in operations that do not require combat. These operations may include disaster relief, humanitarian assistance, and military support for either national or international agencies and civil authorities. The COP can be of significant value in MOOTW and will be used to report major and significant air, ground, maritime, or space events where possible. In many circumstances the communications architecture may not support or facilitate easy reporting of unit, event, or force location. In these cases the controlling authority or CCS should try to depict the best probable locations with overlays and manual inputs. Commanders should strive to use automated reporting methods as much as possible to achieve real-time reporting for MOOTW. Further guidance on reporting for MOOTW will be situational and will come from the NMCC. In the cases where MOOTW transition into crisis situations or JTFs, use the reporting criteria for the appropriate circumstance.

8. Marine Air Ground Task Force (MAGTF). Reporting policies for the MAGTF is the same as for other components for each respective track type.

9. Service/Component Information. Service-unique functions that enhance the COP must follow the migration path for GCCS meeting the appropriate level of DII COE compliance. Functions that support reporting to the COP need to be joint and universal in application.

10. Unified Action. Operations may involve participation of nonmilitary organizations or agencies. In some instances these agencies will function to provide reporting of information. However, there may be cases where the COP will be useful to these agencies in their role. Some nonmilitary agencies equipped with only GCCS will need the COP transmitted to them. For other agencies that do not have the COP, it may be appropriate to provide a temporary GCCS capability. For unified actions, ensure that the proper security requirements are met before the release of information.

11. Track Management. Key to the whole success of the COP is effective and efficient track management. Track managers must be proficient at all track management duties to include knowing how to identify and handle erroneous information and late information and how to handle and coordinate updates. Commanders must ensure that track managers are given sufficient authority to keep the COP current.

a. Continuous Management. Experience shows that the COP must be continually managed for it to be effective. Personnel assigned duties for track management must keep up with changes as they occur.

b. Track Data Base Managers. The track database managers must be knowledgeable of the entire COP system operation, know the level of detail that will be reported for each circumstance, be focused on the task at hand, be proficient in track management, know how to filter, and have a clear understanding of the operational goals. The track managers are essential to providing a fused and correlated operational picture and therefore must be deeply involved in all aspects of reporting. Effective communication between track managers from the component level to the fusion node is essential. Also a close partnership between the track manager and systems administrator must exist to maintain an effective and accurate COP.

c. Effective Track Management. Operational commanders need an accurate and timely COP on which to base decisions. Uncorrelated tracks, erroneous information, and late tracks must be handled quickly and efficiently. The reporting guidance contained in the preceding paragraphs provide general guidance for standard

reporting. CINCs may choose to make criteria more stringent as necessary.

12. Security Considerations. The CINC and JFC classification authority must be actively involved in the building the COP to ensure proper classification and accreditation for hardware, software, and distribution nodes.

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APPENDIX A TO ENCLOSURE A

AIR TASKING ORDER REPORTING REQUIREMENTS

1. General. GCCS provides the capability to transfer and display the ATO in text format. The use of GCCS to distribute the ATO through the chain of command will facilitate information flow and coordination. The ATO can be posted or E-mailed as necessary.

2. Read and Transfer Capability. GCCS provides an ATO read and transfer capability. This allows the rapid transfer of the ATO between commands to assist in planning and coordination. CINCs should make ATOs available to the NMCC for all operations and circumstances.

3. Monitoring. During the Crisis Monitoring, CINCs will ensure the designated Air Component Commander provides the ATO to the NMCC and supporting CINCs using GCCS. The ATO will be provided as soon as published and updated as required.

4. JTF Operations. When a JTF has been established, CINCs will ensure that the designated Joint Force Air Component Commander (JFACC) provides the ATO to the NMCC and supporting CINCs daily.

5. Joint Exercises. When a significant military exercise is under way, CINCs will provide the ATO to the NMCC and supporting CINCs for monitoring as required.

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ENCLOSURE B

INFORMATION FLOW AND DATA MANAGEMENT

1. Information Flow

a. Time Value. The information that the COP displays is time sensitive. The approved joint definitions (reference f) of real time, near real time, non-real time, and that of historical and predictive serve to provide a commander a feel for the information value. Delays due to processing, slow communications networks, or any other transparent delays can further degrade and add confusion to the situational awareness. It is imperative for track managers and operators to know the time value of the data being displayed on the CTP and communicate this to commanders. Commanders should remain aware of the time value of the COP information and use it appropriately.

b. Source Reports. The better the source information the better the CTD. The CTD is the basis for building the CTP and COP. Part of the CTD is built with source information reports from sensor reports of air, land, maritime, and space tracks. This information may include hostile, neutral, friendly, or unknown data. The source of this information may come over various transport networks such as SIPRNET or NIPRNET. Feeds from various platforms come in a variety of data forms such as TIBS, TRAP/TOPS, TADIL A/B/J, or manual input. An adequate communications network is necessary to allow data feeds to provide information to the CCS. Intelligence data may be screened or processed via a Joint Intelligence Center (JIC) or Joint Analysis Center (JAC) before arriving at the CCS. Some feeds of information may come from multinational forces through appropriate filters or security devices. Manual input of data may occur at any level as necessary from situation reports or SORTS. In some cases specific technical solutions and security arrangements must be advanced to ensure automatic vs. manual feeds into the COP.

(1) Reporting methods of data from source locations may come in one of three ways, (a) automatic detection by remote, dedicated, and organic surveillance sensors, (b) units that automatically report their position or status (e.g., through global positioning system (GPS) or , (c) manually entered data from situation reports, SORTS, or other source reports.

(2) Information feeds processed through a JIC or JAC will have a time delay. Track managers must pay particular attention to the time value of data coming from correlation, processing, and screening sites. Processed data has high operational value, but good judgment with regards to the time value and close coordination between operational and intelligence personnel is an important planning factor.

(3) Manual input of data is the least preferred method to update CTP or COP displays. Commanders at all levels, particularly the Services, should make automated reporting of COP a top priority. Manual inputs can provide force or unit locations not connected to an automated reporting mechanism. Manual input of data is resource intensive and has a time delay. Track managers must achieve a balance between achieving the appropriate level of detail reporting, the burden of data input, and time management. For manual inputs, unless specifically instructed by the NMCC, CINCs will need to further define force level reporting relevant for the type and scope of operation in their AOR. For example, the reporting of major combat elements, major aviation units, and major forces appropriate for the level of operation and situation will vary depending upon the situation, level of conflict, and speed of operation. In some instances a division may be a major combat element for one operation and a battalion in another. Selecting the right force level to report for each situation or operation will come with experience and proficiency. Figure 2 show how source reports and time value of data are interrelated.

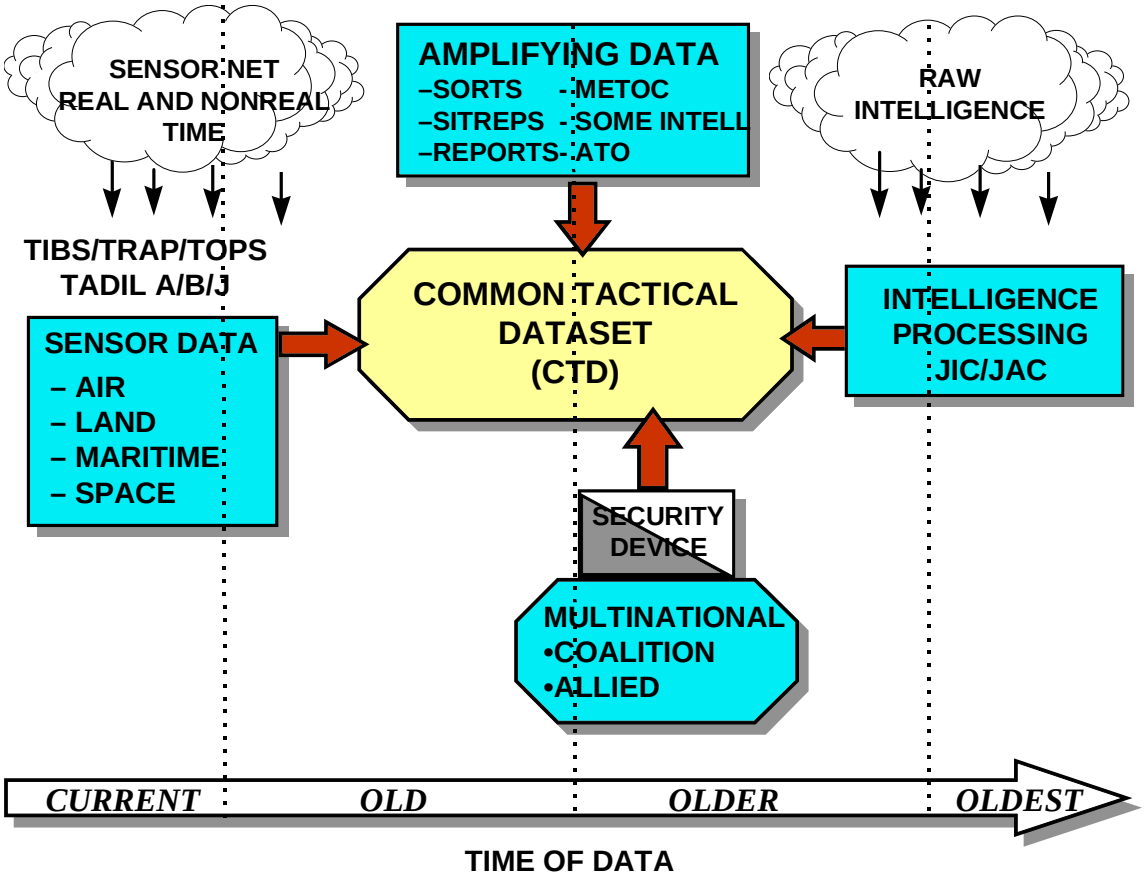

FIGURE 2. SOURCE REPORTS AND TIME VALUE

c. CTD, CTP, CCS, and COP Relationships. The CTD is the CINC's information bank that CTPs and the theater COP is built from. The CTD contains theater-wide Orders of Battle and may be in one physical location or may be a logical database. The CCS is appointed by the CINC and manages the CTD for the theater. For a single operation, at the JTF level, a CTP is built from data pulled from the CTD coming from appropriate source feeds. The JTF may apply additional overlays or filters for the CTP. The CTP is made available to the CINC who may have the CCS apply additional overlays, combine information from several CTPs, add in information from global CINC's COPs, or filters data to provide a theater-wide COP. If there are more than one JTFs in operation in an AOR there may be several CTPs rolled up into the theater COP. The COP can be made available to other sites in the network. Within a specific Local Area Network (LAN) or Wide Area Network (WAN), designated sites are responsible for management of various components of the COP (i.e., land, air, or maritime tracks).

2. Data Management

a. Distributed Track Coordination. GCCS uses distributed, rather than centralized, information flow. Specific sites have responsibility for managing certain types of tracks. Assignments are based upon a combination of AOR characteristics, data source, and track category (i.e., land, air, surface, or subsurface). Each CINC/JTF will determine the best manner to correlate and fuse its track types, integrate inputs, and perform track management actions to maintain an accurate representation of the battlespace.

b. Common and Accurate Data. Throughout the network, among participants viewing the same COP, commonality and accuracy is essential. Although detail levels may be different, accuracy must be exact. Information that is available to the CINC but not immediately to the CJTF should be shared to facilitate a common picture. Similarly, if the COP is being forwarded outside the theater to the NMCC or other supporting commands, it should remain consistent throughout. However, this does not mean that all users must have the same display at all times, or the same level of detail; rather, all users should be able to obtain and load a filter and default set known as the "JFC's CTP" throughout the network as required.

3. Track Management. Proper track management is critical to maintaining an accurate COP. Considering data can come from multiple sources, it is possible that at times two or more sources will provide a contact report on the same object. Track managers must resolve data conflicts in the COP through the correlation process. Specific functions and procedures for track management follow:

a. CINCs or designated representatives act as the track manager for their respective AORs. Reporting responsibility may be by the type of track (air, ground, or maritime), geographic area, or a combination of both. When establishing a JTF, the CJTF will fulfill the track management function for the joint operations area. The Track Manager will use all means available to ensure that track databases are consistent between site and components.

(1) Effective track management discipline requires that only the reporting authority can delete tracks or merge tracks. This is to prevent erroneous information from contaminating the tactical picture resulting in conflicting and erroneous information. Only the theater track manager can override this policy when sufficient information proves that erroneous tracks exist and need update.

(2) The theater track manager has control authority over data coming from outside of the AOR.

(3) Correlation and fusion of data are the key functions of track management

(a) Correlation is a process to match contact reports to visually displayed tracks. Refer to the Glossary for a definition.

(b) Fusion is a process to integrate already correlated track information with additional data to refine the track. It puts together all reports associated with one object into a single track. Track managers for each component, air, land, sea, or space, have the responsibility for management of their own particular types of track based on some combination of AOR, attributes, and sensors.

c. Joint Force Air Component Commander (JFACC). The JFACC track manager is normally responsible for reporting airborne contacts at altitudes from the surface up to 100,000 feet. A maritime component commander track manager may have to manage the air picture for airborne contacts operating over water outside of the JFACC's responsibility. The air component is responsible for:

(1) Providing adequate air-sensor coverage of the JOA.

(2) Fusion of organic and nonorganic air track data prior to its injection into the CINC COP.

(3) The deletion of tracks which have left the AOR, are not valid, or exceed time-late deletion criteria.

(4) Maintaining the communications to support broadcast of information as required.

d. Joint Force Land Component Commander (JFLCC). The JFLCC track manager, is normally responsible for reporting and database management for all ground tracks at least two echelons below the JFLCC command level, unless more detail is necessary. The ground component is responsible for:

(1) Fusion of organic and nonorganic ground track data prior to its injection into the CINC COP.

(2) The deletion of tracks that have left the AOR or are not valid.

(3) Maintaining the communications to support transmission of the ground picture to other sites as required.

(4) Maintaining appropriate comments regarding combat effectiveness as required by the CINC.

e. Joint Force Maritime Component Commander (JFMCC). The JFMCC track manager is normally responsible for reporting all maritime contacts. Depending upon the AOR and tactical situation, the JFMCC may have to manage the air picture for airborne tracks over water. The JFMCC is responsible for:

(1) Fusion of organic and nonorganic maritime track data prior to its injection into the CINC COP.

(2) The deletion of tracks that have left the AOR or are otherwise not valid.

(3) Maintaining the communications to support transmission of the maritime picture to other sites as required.

(4) Maintaining appropriate comments regarding combat effectiveness as required by the CINC.

f. Joint Force Special Operations Component Commander (JFSOCC). The JFSOCC will provide location data (when classification permits) that details the location of SOF forces when SOF forces operate within an AOR or JOA. When providing this information, the JFSOCC will be responsible for track management of SOF forces.

g. Threat Data. The JIC/JAC will provide threat data, both raw and analyzed, from theater-specific intelligence databases. Other sources of threat information include various INTELINK (S,C) homepages, Modernized Integrated Data Base (MIDB), and Imagery Product Archive (IPA) via the MIDB/IPA/GCCS (MIG) application, E-mail, and Internet Relay Chat (IRC).

h. Early Warning Information. Events or information that warrant immediate or special dissemination may be classified as early warning information. Injection of early warning information supplements but

does not replace existing early warning networks. This includes, but is not limited to:

(1) Theater Missile Defense (TMD). In most situations, USSPACECOM-controlled assets will provide first warning of TBM attack to the COP. The theater ballistic missile defense (TBMD) module and tactical related applications (TRAP) feed provide automatic warning and tracking function in the COP.

(2) Nuclear, Biological, Chemical (NBC) Data. Supporting CINCs and component commanders will enter and maintain data related to NBC information such as:

(a) Deployed/dispersed friendly defensive NBC sensors/assets.

(b) Deployed/dispersed enemy offensive NBC assets.

(c) Dispersion of NBC contaminants resulting from enemy use.

(d) Dispersion of NBC contaminants resulting from conventional strikes against enemy NBC assets.

(e) Potential theater support nuclear strike consequences.

i. Foreign Releasability. JTF operations sometimes include multinational forces organized within the structure of an alliance or coalition. Multinational forces need to share the CTP of the JTF operation. Locations of multinational forces are a necessary part of the JTF CTP. The JTF multinational components, or the national headquarters of the multinational forces, can provide locations of their forces directly to the JTF commander for injection or at the component level with JTF coordination if it is more efficient. Distribution of the COP to coalition or alliance partners requires that only data releasable to all members of the multinational force be allowed in the picture. A second option is to provide a separate network at a classification releasable to the members of the coalition or alliance. In this instance, an approved sanitizing device can provide the information for a separate multinational network. The CJTF commander has the responsibility to determine which approach is appropriate for each operation. A disadvantage of operating the entire CJTF network at the multinational releasable level is that the CJTF and components cannot be connected directly to SIPRNET or to the Integrated Services Digital Network (ISDN) point of presence, which operates at the SECRET level. One option may be to establish a

special cell to monitor both pictures and to manage the tracks to prevent significant divergence of data. A significant divergence is one in which location data impacts operational planning. Another option is to use an authorized multilevel security (MLS) device such as RADIANT MERCURY to filter nonreleasable data. However, it is important not to become dependent on any single device or process to enforce security policy. Constant review is necessary to ensure complacency does not occur. Specific cautions on sharing multinational information include:

(1) Ensure the involvement of the security officer in all releasability issues.

(2) Ensure releasability of information is consistent with allied and coalition agreements.

(3) Coordinate all actions of releasability with the appropriate agencies if not clearly spelled out in allied or coalition agreements.

(4) Ensure proper accreditation of any sanitizing devices.

ENCLOSURE C

COP OPERATIONAL ARCHITECTURE

1. General. Consistent with references a and b, operational reporting of the COP follows the chain of command. Hence, the COP architecture consists of a hierarchy of reporting and processing facilities taking data feeds from sensors, manual inputs, and automated sources. The systems and technical architecture will be consistent with the JTA outlined in reference b. To support critical joint warfighter interoperability, the exchange of COP data needs to be seamless as envisioned in the C4I for the Warrior concept (reference g). Achieving and maintaining this vision requires total interoperability and cooperation of the Services to focus on joint applications. The key elements of the COP reporting architecture are as follows:

a. The lowest levels perform reporting functions to the CCS for data correlation to form the baseline for the CTD.

b. The CCS further processes and refines the data to produce a CTP at the JTF level. If more than one JTF is in operation the CTD is tapped into for each JTF to provide a CTP for each operation if appropriate.

c. At the CINC level, overlays to the CTP (or several CTPs if there is more than one JTF in operation) provide additional information where transmission to the NMCC occurs. The CINC provides the gateway for theater COP information for supporting CINCs, Services, and agencies. Figure 3 shows the hierarchical relationships of the various levels.

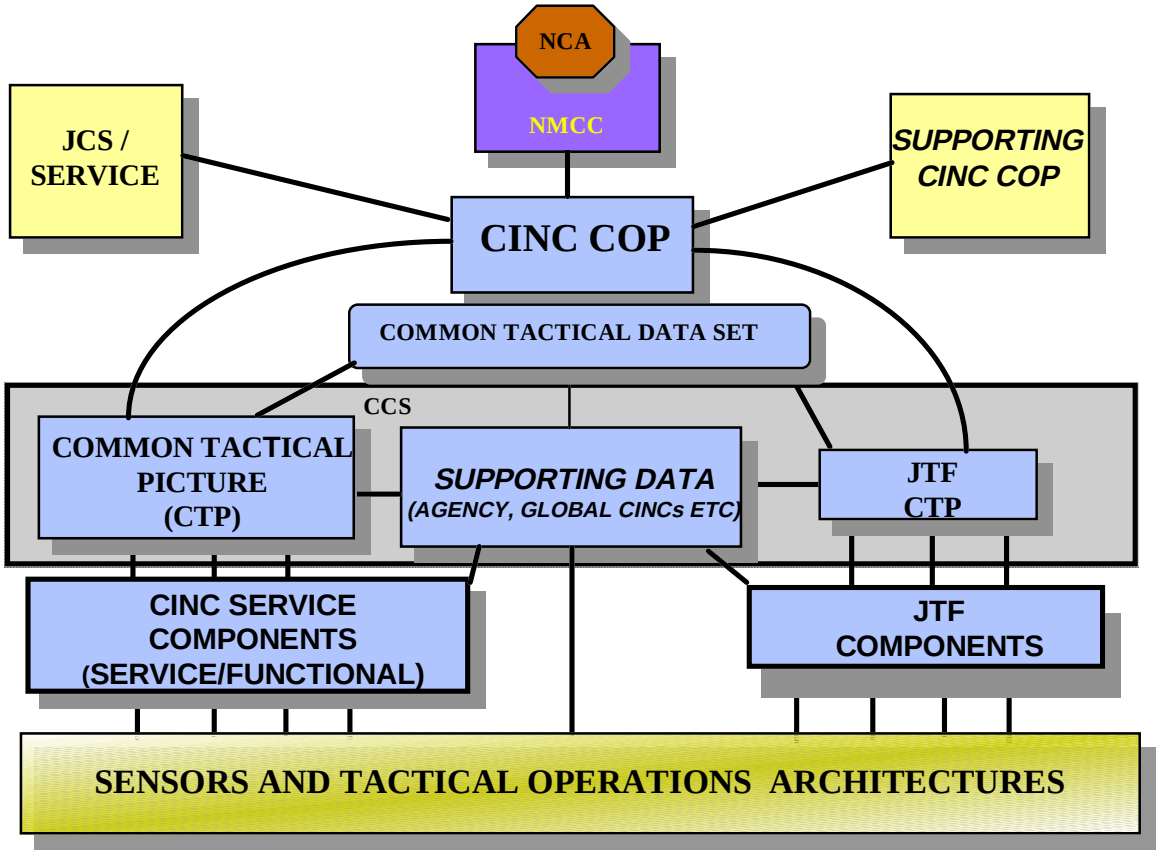

FIGURE 3. COP REPORTING HIERARCHY

2. Sensors

a. The CINC is responsible for surveillance in the theater. Tracks are provided to GCCS from various sensors. The JFC may use any reliable and appropriate sensor source as possible in the build of the COP. The value added by JIC analysis must be weighed against any additional time this incurs for delivery.

b. Dedicated organic sensors such as AWACS, JSTARS, RC-135, and others report directly from the sensor to a component for correlation and reporting to the track database.

3. Processing Facilities. GCCS assimilates input reports of sensor contacts on hostile and neutral units from dedicated sensors and receives position data from friendly, and some neutral, units. Theater information collection and processing nodes, such as the JIC, may report directly back to the CCS for inclusion in the COP. If for some reason data is sent to a component with reporting responsibility for a particular area or track type, that component will then be responsible for fusing the

data with any other data available on the contact and then transmitting it to the appropriate cell in the network.

4. Communications

a. The distribution of the COP between the CINC, component units, supporting CINCs, and the NCA is done via the Secret Internet Protocol Router Network (SIPRNET) communication links and tactical communication paths. The distribution must also be done in multiple formats (e.g., J-series, United States Message Text Format (USMTF), OTH-T GOLD).

b. Normally, COP nodes will communicate with each other via TCP/IP based networks. Communications agencies need early involvement in planning COP operations, which may require extensive bandwidth.

c. Although a multitude of sensors may be available to the JFC, in order for the information to flow into the CTD, a communications link is necessary from sensor to the CTD. The primary purpose of theater communications networks is to support operational mission traffic. Exercise care in providing a communications architecture to support the COP so as to not strain vital communications assets necessary for mission accomplishment.

5. Display Terminals. GCCS workstations will display the COP/CTP. The CCM/CTPM will distribute display and filter settings which, if used, will provide a common picture to all users. CINC, JTF, and component commanders will display data according to their preferences, driven by current and future operations. This is an area that must remain extremely flexible so each level of command can exercise information control to execute operations and plan future actions. Use the following guidelines with respect to GCCS COP display:

a. Icons. MIL STD 2525A defines the correct symbology for track display and transmission. Tailored symbology may be used at a particular display site for easy icon recognition, but MIL STD 2525A will be used for all track communications and broadcasts.

b. Mapping Datum. MIL STD 2401, World Geodetic System 1984 (WGS-84), is the standard to which positional information is registered.

c. Time. The time standard for GCCS COP is Coordinated Universal Time (UTC/Zulu) with an automatic conversion capability to local time.

d. Display Options. COP information can be displayed on more than GCCS workstations. The following are two of the more common:

(1) COP information can be displayed on PC workstations using the Command and Control for Personal Computer (C2PC) application available on Windows NT-based clients as long as there is SIPRNET access and users have a higher-end, powerful PC. For clients running less powerful PCs the Enhanced Linked Visual Information (ELVIS) application allows access to see the tactical picture.

(2) Afloat JMCIS terminals display the COP via tactical communications path.

e. Track Reporting. Service components should strive to migrate to the LINK-16/TADIL J standard as directed in reference f. Tracks will be reported using one of the following formats:

(1) OTH-T GOLD. OTH-T GOLD is the basis for non-real-time exchange of data between GCCS and other systems. The Navy currently uses this message format to transmit platform data through a network channel. OTH-T GOLD only supports transmission of formatted ASCII text or MDX message data. It uses a serial communications system.

(2) Tactical Information Broadcast System (TIBS). TIBS is a formatted satellite broadcast system, delivering air and ELINT track data. TIBS air data will occasionally provide amplifying track data like course, speed, and altitude.

(3) TADIL A. TADIL A or Link 11 is a secure data link using format M series message. It is operated in a roll-call mode under control of a net control station to exchange digital information among airborne, land-based, and shipboard systems. It uses UHF or HF transmissions.

(4) TADIL B. TADIL B is a secure, full-duplex, point-to-point digital data link.

(5) TADIL J. TADIL J or Link 16 is a secure high-capacity, jam-resistant, nodeless data link that uses the Joint Tactical Information Distribution System (JTIDS) transmission characteristics. It is limited to UHF transmissions (with a UHF relay capability), but provides extensive amplifying track data.

(6) Tactical Data Dissemination (TDDS)/TOPS. TDDS/TOPS is a formatted satellite broadcast system, delivering a variety of nationally collected correlated data.

(7) Tactical Related Applications (TRAP). TRAP provides near-real-time contact data to a variety of Tactical Receive Equipment (TRE), Constant Source, and SUCCESS Radio users. TRAP receives input from local and remote collection systems, converts the data to a binary format, encrypts, encodes, and provides it for transmission to a UHF communications satellite on a 2,400 bps circuit. The name "TRAP" is in process of being replaced by the TDDS.

(8) Officer in Tactical Command Information Exchange System (OTCIXS). OTCIXS is a formatted broadcast system providing naval force position data and messaging capability.

(9) United States Message Text Format (USMTF). USMTF is the DOD's message transmittal format standard.

(10) Other Track Formats. As required.

g. Data Display. All levels of command and execution can overlay available database information (to include planning and force projections) on the COP/CTP as needed in accordance with map and icon suggestion mentioned previously.

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ENCLOSURE D

PERSONNEL AND TRAINING REQUIREMENTS

1. General. Commanders must ensure that they have highly trained and proficient track managers and operators to build a complete and accurate COP. In many cases, operator functions and track management will involve the systems administrator. The required skills listed here do not imply that track managers and COP watchstanders will perform system administration duties. Rather, they serve to provide general skills necessary to maintain a COP, proficiency in operation of the system, and provide a knowledge base of awareness of the system functions. There must be a close partnership between operators and system administrators.

2. Required Skills. The on-line help function for CHART (COP) provides a good description of each CHART function. Using the on-line help function in conjunction with scenario-based exercises can provide any operator with rudimentary skill in displaying and manipulating the COP in a short period of time. There are two skill levels that each operations cell working COP functions need: the basic operator and the advanced operator (track manager or track display manager duties). Advanced operators or track managers involved with the CTP/COP on a daily basis will need more proficiency at all the functions and should seek formal training.

a. Basic skills and knowledge include the following:

(1) Understand the basic system architecture on how CHART works on stand-alone and high-speed networks. Know basic information on how communications work, where feeds come from, how to get them, and background information on the format of data feeds that CHART accepts.

(2) Know basic GCCS functions; i.e., log-in/log-out, selecting and using applications, use of E-mail, and the web browser.

(3) Know how to open the application and navigate around the basic functions. Know how to access different map displays and change default settings.

(4) Know how to read and interpret displayed information.

(5) Know how to create new tracks, overlays, PIM tracks, and track groups.

(6) Know how to deactivate overlays and declutter the display.

b. Advanced skills for operators include the following:

(1) Perform preliminary troubleshooting to assist system administration personnel in isolating hardware/software problems.

(2) Know how to create slides, recall slides, mail slides, create a briefing, and display a briefing.

(3) Know how to subscribe to and monitor newsgroups for information and know the procedures for establishing a newsgroup.

(4) Know the topography of the GCCS network and LAN.

(5) Know the location and configuration of terminals within the Joint Operations Center (JOC).

(6) Have a basic understanding of types of tracks, track database management, appearance of tracks, adding new tracks, verifying tracks, management of track display, how to input ground tracks, database searches, and editing track information. Know the sources for track information.

c. Skills and knowledge required of the track managers.

(1) Stay apprised of status of major network nodes (will need to come from the system administrator).

(2) Know how to set up Auto-Forward Tables. Know how to set up a broadcast to another terminal in conjunction with the Auto-Forward table.

(3) Be proficient at manipulating the COP, specifically:

(a) Be able to save/recall/delete stored maps of the tactical display.

(b) Identify/recall/reload previously loaded Arc Digitized Raster Graphics (ADRG) maps.

(c) Understand how Symbol Labels, Special Controls, and Auto Plot-Off can modify the tactical display.

(d) Understand how Track Type Toggles, Track Hilites, and Symbols controls allow control of what symbols are displayed.

(e) Be able to clean up clutter on displayed tracks on the tactical display.

(f) Know how to create a New Track/New Unit on the tactical display.

(g) Know how to delete/transmit/print tracks and track information.

(h) Identify duplicate tracks in the database.

(i) Enter the track database and manipulate the tracks using Track Summaries controls.

(j) Understand ambiguities in reference to tracks on the tactical display.

(k) Be able to search for selected tracks (Unit, Track) in the database.

(l) Understand how Position Intended Movement (PIM) tracks can display intended movement of a track.

(m) Be able to develop overlays and understand the various types of overlays that can be created on the tactical display.

(n) Be able to set up a track group overlay for selected tracks.

(o) Print screens or windows off the tactical display.

(p) Be able to save/recall a slide and understand how it differs from saving maps under Map Options.

(q) Be able to create a slide briefing using previously saved slides from the tactical display.

d. Personnel assigned to a Joint Operations Center (JOC) who use COP must be trained prior to arrival. When CINCs source for COP operators they need to specify that required COP operators need formal training or experience in COP duties prior to arrival in the AOR. Formal training is best done in a classroom environment by professionals. Even if trained, personnel should refresh their skills by reviewing appropriate COP operator handbooks or running scenario-based examples if they do not use COP on a daily basis. JOC requirements demand proficient COP track managers and operators. Track Managers and watchstanders, however, may have to be able to inform, demonstrate to, or train JOC personnel on the capabilities and limits of the COP.

e. Personnel trained as COP operators, track managers/database managers, and system administrators need to be identified and tracked due to the special training, complexity of skills, and special experience. The Services will develop means to identify COP-qualified track managers, system administrators, and users to facilitate the identification of trained personnel for potential deployment in support of contingency operations (JTF staff, Crisis Action Support, etc.)

3. Recommended Training. Commanders must ensure that their GCCS COP operators are properly trained. The following courses are recommended for GCCS COP Operators or Watchstanders:

a. Joint Maritime Command Information System (JMCIS) Operator School - Course #J2212306 (NTCS-A Display Operator for three weeks.). NOTE: The Navy has responsibility for joint COP training. The name and course number may change as the course is tailored for GCCS COP.

b. Introduction to GCCS.

c. Introduction to JOPES, GSORTS, JDISS.

d. Basic/Advanced UNIX/NT Training (for system administrators only).

e. DISA's Mobile Training Team (MTT), call DSN 223-5853.

f. OJT Hands-On Training - command post exercises (CPX) or live exercise.

g. DIA, JDISS, MIIDS IDB operators courses.

ENCLOSURE E

RESPONSIBILITIES

1. Chairman of the Joint Chiefs of Staff. The Chairman will provide CINCs and JFCs with information requirements for the COP. For JTF operations, GENADMIN messages will supplement ALERT ORDERs or WARNING ORDERs if any additional reporting requirements for COP are necessary.

2. Combatant Commanders. Maintain and control the information in their AOR. The COP is the tool that allows the CINC to accomplish the requirements found in reference d. Each CINC will designate the build of the CTD and the CTP responsibility for each respective AOR. Therefore, CINCs have overall responsibility for maintenance of the COP within their theaters. They will determine the most appropriate arrangement for distribution of the COP from a JTF or AOR to the Joint Staff and supporting commands. A CINC may delegate CTD and CTP location selection and procedural responsibilities to a JTF or other organizations upon request or as the situation dictates. In addition to ensuring CJCS reporting requirements are met, they may also specify additional theater requirements. Other responsibilities are as follows:

a. Advises the Chairman of any additional resources required to support distribution of the COP.

b. Establishes priorities for information display consistent with CJCS/NMCC priorities.

c. Controls the release of COP to supporting and multinational forces.

d. Designates the location of the CCS, responsibilities for the CTP correlation sites, and the location of the CTD repository.

e. Oversees the communications architecture supporting the mission. Provides assistance or sourcing as necessary to allow information feeds to enter the network to support, as a minimum, essential and necessary COP information (see glossary).

f. Provides a baseline COP for normal daily operations (see Enclosure A for baseline reporting policy).

g. Ensures that the communications architecture will be compliant with JTA.

2. Respective track management responsibilities within each CINC include:

a. CINC COP Manager (CCM). Responsible for management of the single CINC COP.

b. CTP Manager (CTPM). Responsible for management of a CINC or CJTF designated CTP.

c. Track Manager (TM). Responsible for management of an assigned portion of the CTP.

3. Combatant, Functional, and JFCs. Responsible to maintain and provide the COP on GCCS, as appropriate, in accordance with reference c.

4. JTF Establishing Authorities. Responsible to task DISA and force providers to ensure that JTFs are properly equipped to meet COP reporting requirements specified by CJCS and combatant commanders.

5. Service Chiefs. Services will provide training, manpower, and equipment to support COP. In addition, each Service is responsible for assisting CINCs, JTFs, and component commanders in refining COP use at the component level and below.

a. Develop warfighting tactics and strategies that take full advantage of battlespace awareness provided by the COP.

b. Equip forces to provide location information automatically to the CTD. Provide equipment capable of interfacing with each CINCs CTD.

6. Joint Task Force Commanders (CJTFs)

a. Maintain the COP for their respective JOA, in accordance with the supported CINC's reporting requirements, and using procedures outlined in reference c.

b. Establish liaison with multinational forces within the JOA to ensure their inclusion in the COP in accordance with multinational agreements. If no agreement exists, set up liaison with the Department of State to work releasability issues.

7. Track Managers (tactical display managers at JTF and CINC levels).

a. Ensure that reporting requirements are met and arbitrate any conflicts in track identification or accuracy among components.

b. Work with other staff members to ensure tasked sensor systems and reporting systems support COP requirements.

c. Work with the J-6 and system administrators to ensure adequate communications capabilities exist to provide the support of distribution of COP data.

d. Specify the appropriate filters to use to control data sent to various levels and multinational forces.

e. Ensure that dropped tracks that return to the COP are reentered in a timely manner.

f. Work with the J-6 to establish effective COP database management procedures that ensure reliable data.

g. Maintain the COP at the appropriate level of detail defined by the CINC or CJTF for the operation at hand.

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ENCLOSURE F

REFERENCES

a. Joint Pub 1-03, 10 January 1994, "Joint Reporting Structure General Instructions"

b. DISA publication, 22 August 1996 "Department of Defense Joint Technical Architecture," Version 1.0

c. Common Operational Picture Working Group publications, 14 April 1997, "CONOPS for GCCS COP"

d. Joint Pub 1, 11 November 1991, "Joint Warfare of the Armed Forces of the United States"

e. Joint Pub 1-02, 23 March 1994, "Department of Defense Dictionary of Military and Associated Terms"

f. ASD(C3I) memorandum, 18 October 1994, “C4I Tactical Data Link policy”

g. Joint Pub 6-0, 30 May 1995, "Doctrine for Command Control, Communications, and Computer (C4) Systems Support to Joint Operations”

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GLOSSARY

TERMS AND DEFINITIONS

Air Tasking Order (ATO). Used to task and disseminate to components, subordinate units, and command and control agencies those projected sorties, capabilities forces to targets and specific missions. Normally provides specific instructions to include call signs, targets, controlling agencies, etc., as well as general instructions.

Airborne Warning and Control System (AWACS). Air Force and NATO E-3A/B/C aircraft with a sophisticated, jam-resistant pulse-doppler radar, equivalent to US Navy E-2C in providing tactical airborne early warning, command and control, and air battle fighter direction to warfare commanders. AWACS provides wide area air surveillance and control of defense, including airspace management. Can cue interceptors on air targets. Some AWACS (E-3C) have been modified to detect ocean surface targets to support maritime surveillance missions. Has air refueling capability and stations for command staff elements in addition to air detection, tracking, and engagement controllers. ESM capability less sophisticated or automated that E-2C.

Alliance. An alliance is a result of formal agreements between two or more nations for broad, long-term objectives. NATO is one example of an alliance. Alliance operations have developed command and control structures, systems, and procedures. Alliance forces typically mirror their alliance composition, with the predominant nation providing the alliance force commander. Staffs are integrated, and subordinate commands are often led by senior representatives from member nations (reference c).

Architecture. A framework or structure that portrays relationships among all the elements of the subject force, system, or activity. In the Joint Technical Architecture there are three components (reference b):

> Operational Architecture. A description (often graphical) of the operational elements, assigned tasks, and information flows required to accomplish or support the warfighter function. It defines the type of information, the frequency of exchange, and what tasks are supported by these information exchanges.
>
> Systems Architecture. A description including graphics, of systems and interconnections providing for or supporting warfighting

functions. Defines the physical connection, layout, location, and identification of key nodes, circuits, networks, warfighting platforms, etc., and specifies system and component performance parameters.

Technical Architecture. A minimal set of rules governing the arrangement, interaction, and interdependence of the parts or elements whose purpose is to ensure that a conformant system satisfies a specified set of requirements.

area of interest. "That area of concern to the commander, encompassing the area of influence and adjacent areas including extensions into enemy territory to the objective of current or planned operations. This area also includes areas occupied by enemy forces that could jeopardize the accomplishment of the mission." (reference e)

area of operations (AO). That portion of an area of war necessary for military operations and for the administration of such operations. An operational area defined by the joint force commander for land and naval forces. Areas of operation do not typically encompass the entire operational area of the joint force commander, but should be large enough for component commanders to accomplish their missions and protect their forces.

area of responsibility (AOR). A defined area of land in which responsibility is specifically assigned to the commander of the area for the development and maintenance of installations, control of movement, and the conduct of tactical operations involving troops under the commander's control, along with parallel authority to exercise these functions. 2. In naval usage, a predefined area of enemy terrain for which supporting ships are responsible for covering by fire on known targets or targets of opportunity and by observation.

CINC COP Manager (CCM). The CCM is responsible for management of the CINC COP.

coalition. A coalition is an ad hoc arrangement between two or more nations for common action; for instance, the coalition used in the Gulf War. Coalitions are typically formed on short notice and can include forces not accustomed to working together.

combined. Operations conducted between two or more forces or agencies of two or more allies. When all allies or Services are not involved, the participating nations and Services shall be identified; e.g., Combined

Navies (reference e). Note: combined forces consist of allies and not coalition members.

Common Operating Environment (COE). DOD standards-based C2 software policy developed in order to support applications services, applications platform services, and applications platform cross-area services among joint and service/agency automated systems. The COE is identified in volume II of the Tactical Architecture for Information Management (TAFIM). [DII Master Plan]

Common Operational Picture. The COP is the integrated capability to receive, correlate, and display a Common Tactical Picture (CTP), including planning applications and theater-generated overlays/projections (i.e., Meteorological and Oceanographic (METOC), battleplans, force position projections). Overlays and projections may include location of friendly, hostile, and neutral units, assets, and reference points. The COP may include information relevant to the tactical and strategic level of command. This includes, but is not limited to, any geographically oriented data, planning data from JOPES, readiness data from SORTS, intelligence (including imagery overlays), reconnaissance data from the Global Reconnaissance Information System (GRIS), weather from METOC, predictions of nuclear, biological, and chemical (NBC) fallout, and Air Tasking Order (ATO) data.

Common Tactical Dataset. The CTD is a repository of data that contains all the information available to the JTF that will be used to build the COP and CTP. The CTD is not fused, correlated, or processed data in the sense that the information has not been scrutinized by the CCM or track managers for time value, redundancy, or conflicts. However, the CTD may contain processed intelligence data. The CTD is a major sub-component of the COP and refers to: the CINC designated repository for current battlespace information including disposition of hostile, neutral, and friendly forces as they pertain to US and multinational operations ranging from peacetime through crisis and war for the entire area of responsibility (AOR). Upon discretion of the CINC, the CTD may be a logical database vice physical if there are several JTFs or activities that will necessitate COP reporting. In these cases there may be more than one location of database storage.

Common Tactical Picture. The CTP is derived from the CTD and other sources and refers to the current depiction of the battlespace for a single operation within a CINC's AOR including current, anticipated or projected, and planned disposition of hostile, neutral, and friendly forces as they pertain to US and multinational operations ranging from

peacetime through crisis and war. The CTP includes force location, real time and non-real-time sensor information, and amplifying information such as METOC, SORTS, and JOPES.

command, control, communications, computers, and intelligence (C4I) Systems. Integrated systems of doctrine, procedures, organizational structures, personnel, equipment, facilities, and communications designed to support a commander's exercise of command and control across the range of military operations. The systems that are the information exchange and decision support subsystems within the total force command and control support system. The support systems include intelligence information gathering and analysis.

CONSTANT SOURCE . A near real-time dissemination system of ELINT data to theater units. It is used to support all mission areas. Multi-source data is received from Tactical Digital Information Exchange System Broadcast/Tactical Receive Equipment (TADIXS B/TRE) as well as National and airborne ELINT broadcasts. Inputs and outputs are TACELINT. System supports intelligence analysis, indications and warning and targeting. Also interfaces with LOCE for transmission of TACELINTs for LOCE AOI.

COP Hierarchical Information Importance. Information that has relative importance to the mission at hand. For each force level or echelon (major force, major combat element, major aviation units, etc.) detail level of reporting is allowable to focus in on the appropriate center of gravity. This hierarchy of importance provides the user the ability to select the scale of information and displays generated on the COP to the level of detail required for the appropriate reporting levels. The information hierarchy may be broken out into the following categories:

essential to the mission. Indispensable to the mission, mission planning, or mission execution. Of fullest importance in accomplishing the mission at hand.

necessary to the mission. Needed to achieve certain mission results or functions. Provides key planning and overview information.

additive to the mission. Information that adds value to the mission accomplishment by providing a substantial increase of performance or a significant combat advantage.

enhances the mission. Information not needed for successful mission accomplishment, but if used will increase planning and execution capabilities. This information helps improve combat capability.

extraneous to the mission. Information of no or little value to mission accomplishment other than providing a general overview of ongoing combat support activities.

COP Correlation Site (CCS). The CCS is the CINC-designated location where all data in the COP is received, correlated, managed, and disseminated by the CCM.

correlation. Matching display information with the actual contact it represents. Example: Making the determination that an aircraft is the same as indicated on the visual display (derived from reference e). There are two types of correlation, manual and automatic. Manual correlation is performed by the track database manager or operator when two tracks for the same object appear on the display and involves verifying tracks with situation reports. Automatic correlation is performed by the software when a track is reported from two different feeds (For example: A track detected by TIBS and also TRAP simultaneously and being correlated into one track).

crisis situation. An incident or situation involving a threat to the United States, its territories, citizens, military forces, possessions, or vital interests that develops rapidly and creates a condition of such diplomatic, economic, political, or military importance that commitment of US military forces and resources is contemplated to achieve national objectives (reference e). A crisis situation will prompt the release of an alert order.

Fusion. The combining of automatically correlated information with data that refines the information or presents it in an intuitive format. Fused data in many cases will arrive later than real or near-real-time data.

High Interest Tracks. High Interest Tracks are designated by the JFC or above that carry significance for any reason; examples are use of a unique weapon system, VIP tracks, or special missions. Size of the track does not matter in determining it's interest value.

JFACC. Joint Force Air Component Commander (applies to both CINC and CJTF Air Component). The joint force air component commander derives authority from the joint force commander who has the authority to exercise operational control, assign missions, direct coordination

among subordinate commanders, redirect and organize forces to ensure unity of effort in the accomplishment of the overall mission. The joint force commander will normally designate a joint force air component commander. The joint force air component commander's responsibilities will be assigned by the joint force commander (normally these would include, but not be limited to, planning, coordination, allocation, and tasking based on the joint force commander's apportionment decision). Using the joint force commander's guidance and authority, and in coordination with other Service component commanders and other assigned or supporting commanders, the joint force air component commander will recommend to the joint force commander apportionment of air sorties to various missions or geographic areas.

JFLCC. Joint Force Land Component Commander (applies to both CINC and CJTF Land Component). The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for making recommendations on the proper employment of land forces, planning and coordinating land operations, or accomplishing such operational missions as may be assigned. The joint force land component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. The joint force land component commander will normally be the commander with the preponderance of land forces and the requisite command and control capabilities.

JFMCC. Joint Force Maritime Component Commander (applies to both CINC and CJTF Maritime Component). The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for making recommendations on the proper employment of maritime forces and assets, planning and coordinating maritime operations, or accomplishing such operational missions as may be assigned. The joint force maritime component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. The joint force maritime component commander will normally be the commander with the preponderance of maritime forces and the requisite command and control capabilities.

JFSOCC. Joint Force Special Operations Component Commander. The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for making recommendations on the proper employment of special operations forces and assets, planning and coordinating special operations, or accomplishing such operational missions as may be assigned. The joint

force special operations component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. The joint force special operations component commander will normally be the commander with the preponderance of special operations forces and the requisite command and control capabilities.

Joint Intelligence Center (JIC). The intelligence center of the joint force headquarters. The joint intelligence center is responsible for providing and producing the intelligence required to support the joint force commander and staff, components, task forces and elements, and the national intelligence community. See also joint intelligence architecture.

JOINT STARS (JSTARS). Joint STARS is the multimode radar system carried aboard an E-8C aircraft. The radar, designated AN/APY-3, is an X-band synthetic aperture phased array system. The radar scans electronically ± 60 degrees in azimuth through its in-line slot array and scans mechanically in elevation. The radar is capable of detecting nonemitting targets and tracking moving targets. It operates in a wide area surveillance mode with Moving Target Indicator (MTI); a higher resolution, smaller area mode with MTI; or in a Synthetic Aperture Radar (SAR) mode for fixed target detection. The purpose of the system is to provide positional information on primarily land-warfare targets of interest, in order to locate enemy formations and determine enemy movements.

Joint Technical Architecture (JTA). The JTA specifies a set of performance-based, primarily commercial, information processing, transfer, content, format, and security standards. These standards specify the logical interfaces in command, control, and intelligence systems and the communications and computers that directly support them.

joint operations area (JOA). That portion of an area of conflict in which a joint force commander conducts military operations pursuant to an assigned mission and the administration incident to such military operations (reference e).

Marine air-ground task force (MAGTF). A task organization of Marine forces (division, aircraft wing, and service support group) under a single command and structured to accomplish a specific mission. The Marine air-ground task force components will normally include command, aviation combat, ground combat, and combat service support elements (including Navy Support Elements). Three types of Marine air-ground task forces which can be task organized are the Marine expeditionary

unit, Marine expeditionary brigade, and Marine expeditionary force. The four elements of a Marine air-ground task force are: a. command element (CE); b. aviation combat element (ACE); c. ground combat element (GCE); d. combat service support element (CSSE).

major aviation units. A Major combat element that directly produces combat capability. The size of the element will vary by component, force capability, and number of elements available. This term should be defined by the JFACC/ACC particular to the operation at hand, but in general refers to aviation units of significant size, composition, or capability. A squadron is an example of a major aviation unit, but not exclusively. For instance, a capability, such as reconnaissance or air-refueling may make a few airframes a major aviation unit if they are significant enough to the operation (reference e).

major combat element. Those organizations and units described in the Joint Strategic Capabilities Plan that directly produce combat capability. The size varies by Service, force capability, and total number of such elements available. Examples are Army divisions and separate brigades, Air Force squadrons, Navy Task forces, and Marine expeditionary forces (reference e).

major force. A military organization comprised of major combat elements and associated combat support, combat service support, and sustained increments. The major force is capable of sustained military operations in response to plan employment requirements (reference e).

military operations other than war. Operations that encompass the use of military capabilities across the range of military operations short of war. These military actions can be applied to complement any combination of the other instruments of national power and occur before, during, and after war. (reference e).

National Command Authorities (NCA). The President and the Secretary of Defense or their duly deputized alternates or successors.

Officer in Tactical Command Information Exchange System (OTCIXS). OTCIXS is a 2.4 kbps UHF demand assigned multiple access (DAMA) multiuser command and control SATCOM data link circuit that provides the primary means of disseminating OTH-T information within Navy battle groups. It is also used to move OTH-T data between battle groups, or between battle groups and shore-based commands. OTCIXS was designed to operate as a network supporting up to 60 users. In practice,

many more than 60 users are often on the net, resulting in severe netloading problems.

Order of Battle (OB). The identification, strength, command structure, and disposition of the personnel, units, and equipment of any military force.

RIVET JOINT. RIVET JOINT is an Air Force RC-135 COMINT and ELINT collector. RIVET JOINT provides situation awareness and indications and warning information, primarily focused on air- and land-based air defenses. Intercepted ELINT is disseminated in a bent-pipe manner, while COMINT may be manually fused with ELINT and sanitized to the GENSER level prior to reporting. Contact reports are disseminated in a proprietary, binary, TADIL J-like format via the Tactical Information Broadcast System (TIBS), a UHF SATCOM or line-of-sight broadcast. RIVET JOINT is the primary producer for the TIBS broadcast, although additional sources (up to 10 total) may be included. Future plans include support for dual SI and GENSER broadcasts. Recipients of RIVET JOINT reports include the CGS and other TIBS users.

significant track. A high-interest track that is behaving in an unusual manner, of major impact on the operation, warranting attention for any reason, or could pose a threat to a defended area. Tracks specified as special interest in the ALERT ORDER or WARNING ORDER. Applies to any air, ground, or maritime component.

Tactical Digital Information Link (TADIL). A Joint Staff approved, standardized communication link suitable for transmission of digital information. Current practice is to characterize a tactical digital information link (TADIL) by its standardized message formats and transmission characteristics. TADILs interface two or more command and control or weapon systems via a single or multiple network architecture and multiple communication media for exchange of tactical information.

TADIL-A. A secure, half-duplex, netted digital data link utilizing parallel transmission frame characteristics and standard message formats at either 1364 or 2250 bits per second. It is normally operated in a roll-call mode under control of a net control station to exchange digital information among airborne, land-based, and shipboard systems. NATO's equivalent is Link 11.

TADIL-B. A secure, full-duplex, point-to-point digital data link utilizing serial transmission frame characteristics and standard

message formats at either 2,400, 1,200, or 600 bits per second. It interconnects tactical air defense and air control units. NATO's equivalent is Link 11B.

TADIL-C. An unsecure, time-division digital data link utilizing serial transmission characteristics and standard message formats at 5,000 bits per second from a controlling unit to controlled aircraft. Information exchange can be one-way (controlling unit to controlled aircraft) or two-way. NATO's equivalent is Link 4.

TADIL-J. A secure, high capacity, jam-resistant, nodeless data link which uses the Joint Tactical Information Distribution System (JTIDS) transmission characteristics and the protocols, conventions, and fixed-length message formats defined by the JTIDS Technical Interface Design Plan (TIDP). NATO's equivalent is Link 16.

Tactical Information Broadcast System (TIBS). The Tactical Information Broadcast System (TIBS) is a multiuser command and control data link. It provides a full duplex binary data path from up to 10 producers to as many as 240 full duplex broadcast recipients with query capability, and an unlimited number of receive-only nodes. The primary source of information carried on TIBS is RIVET JOINT. This circuit provides data on air intercepts, ground control intercept radar sites, target acquisition radars, and early warning radars. The broadcast can be received via satellite or line of sight. Data rates can be selected from 2.4, 4.8, 9.6, or 19.2 kbps. TIBS can be received by TIBS Interface Units (TIU) (full duplex), TIBS Receive Units (TRU) (half duplex), Commander's Tactical Terminal Hybrid Receive (CTT H/R), and the MATT radio.

Tactical Reconnaissance Information and Exchange System (TRIXS). Tactical Reconnaissance Information Exchange System is a multiuser command and control data link. It is a UHF line-of-sight, time division multiple-access (TDMA) narrow band radio system that supports dissemination of Guardrail Common Sensor (GRCS) data from the Integrated Processing Facility (IPF), and up to four other producers, to as many as 100 battlefield users. Either the RC-12 or U-2/TR-1 can provide relay services for the system.

Tactical Related Applications (TRAP). TRAP provides near-real-time contact data to a variety of Tactical Receive Equipment (TRE), Constant Source, and SUCCESS Radio users. TRAP receives input from local and remote collection systems, converts the data to a binary format, encrypts, encodes, and provides it for transmission to a UHF communications

satellite on a 2400 bps circuit. The name "TRAP" is in process of being replaced by "TDDS," for Tactical Data Dissemination System.

timeliness. The acceptable age of the latest report of a track is determined based on the expected reporting frequency of the platform, unit, or facility. The following terms will be used to refer to the timeliness characteristics of COP tracks and not overlays. As a standard reference, all terms unless not otherwise indicated come from the accepted terminology found in reference e.

real time. Timeliness of data or information delayed only by the time required for electronic communication. This implies that there are no noticeable delays. (reference e). Data is real time when current active tracks show current location, updates occur immediately, and the only delay is that of electronic communication.

near-real-time. Data or information delayed by the time required for electronic communication and automatic data processing. (Reference e). Data is older than real time due to data processing, but does not impact the current planning cycle--no significant delays.

non-real-time. Data older than near real time that may impact the planning cycle; tracks should not be considered actual locations but last reported and "in the general vicinity." The reason for delay may be technical or procedural. In general, non-real time data may be considered "static" data.

historical. Pertaining to the replay of historical track data for pattern or comparative analysis. Data should not be used for current operations planning.

predictive. Pertaining to the ability to show the flow of planned operations based on ATO information, etc., to aid the collaborative planning process.

track. The graphic or alphanumeric representation of an object or point whose position or characteristics are collated from sensors or other data sources; or, a collated seer of data items associated for the purpose of representing the position or characteristics of a specific object or point (reference b).

track/database management. The act of entering, correlating, updating, fusing, deconflicting, and otherwise maintaining assigned tracks using existing automated tools or manual methods. Each command level has a

different track database manager responsible for their commands associated information responsibilities (see Enclosure E, Responsibilities).

organic. Assigned to and forming an essential part of a military organization. Organic parts of a unit are those listed in its table of organization for the Army, Air Force, and Marine Corps, and are assigned to the administrative organizations of the operating forces for the Navy (Reference e).

Unified Action. The synchronized application of all instruments of national and multinational power and includes the actions of nonmilitary organizations was well as military forces (reference e).